

<http://www.acschools.org/patternswebquest/patternsintro.html>

Towers of Hanoi

Question #1: What are the minimum number of moves necessary to complete the Towers when there are 4 discs? 5 discs? 6? 7? 8?

Question #2: Make a table where the independent variable is the number of discs and the dependent variable is the minimum number of moves. What pattern develops?

# of discs							
Minimum # of moves							

Question #3: Examining your table and pattern, can you predict how many moves are needed for 10 discs? 20 discs?

Circle 0

Question #1: Once you get the hang of Circle 0, you probably will notice that you are making a particular move to begin. What move are you trying to start with? Why do you begin with that move?

Peg Puzzle

Question #1: What should your first move be?

Question #2: Is there an algorithm you can write that will work for any number of pegs?

Mastermind

Question #1: Once you got better at the game, what kind of guess were you making for your first move?

Question #2: How did you eliminate the different colors?

Question #3: This game works a lot like a proof, as you should base your next move from the previous moves. Try to write a rule as to how to move from one step to the next.

Coin Problem

Question #1: What process did you use to find the counterfeit coin? Did you compare it with another process to see if it was the most efficient?

Question #2: What was the fewest number of times you needed to weigh for 8 coins? 9 coins? 12 coins?

Question #3: For the trials with 8 and 9 coins, the manipulative asks you to solve it in two weighings. Do you think it is possible? How can it be done?

Stick or Switch

Question #1: Try a few different sets of 50 games sticking with the same door every time. What do you notice about the percentage for winning?

Question #2: Now try a few sets of 50 games where you switch. What do you notice about the percentage of winning now?

Question #3: Now just guess whatever you want...stick...switch...it doesn't matter, just do a few sets of 50 games using no pattern. What is happening with the winning percentage?

Question #4: Do you think the show's producers were giving away too many prizes by playing by these rules?

Fill and Pour

Question #1: Which cylinder are you using more? The larger or smaller one?

Question #2: How would this skill be helpful in the real world?